IT Project Management

Specialty	**Institute**
122 – Computer Science	Institute of Computer Science and Information Technology
Educational program	**Department**
Computer Science and Intelligent Systems	Software Engineering and Management Intelligent Technologies (321)
Level of education	**Course type**
Bachelor's level	Special (professional), Mandatory
Semester	**Language of instruction**
8	English, Ukrainian

Lecturers and course developers

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Web of Science: https://www.webofscience.com/wos/author/record/T-7377-2018

More about the lecturer on the department's website

General information

Summary

The objective of the discipline is to acquire knowledge and skills necessary for project planning and implementation; selection of sources of financing for the implementation of the project; ensuring maximum profitability of projects; creating a project team and establishing effective communication.

Course objectives and goals

Formation of students' theoretical and practical knowledge necessary for working with projects, to give an idea of modern project management technology and to acquaint students with the principles of using project management in the tasks of their future professional activity.

Format of classes

Lectures, laboratory classes, self-study, consultations. Final control in the form of an exam.

Competencies

GC1. Ability to think abstractly, analyze and synthesize.
GC2. Ability to apply knowledge in practical situations.
GC3. Knowledge and understanding of the subject area and understanding of professional activities.

GC6. Ability to learn and master modern knowledge.
GC7. Ability to search, process and analyze information from various sources.
GC9. Ability to work in a team.
GC10. Ability to be critical and self-critical.
GC11. Ability to make informed decisions.
GC12. Ability to evaluate and ensure the quality of work performed.
GC14. Ability to exercise their rights and responsibilities as a member of society, to realize the values of civil (free democratic) society and the need for its sustainable development, the rule of law, human and civil rights and freedoms in Ukraine.
PC10. Ability to apply methodologies, technologies and tools to manage the life cycle processes of information and software systems, information technology products and services in accordance with customer requirements.
PC20. Ability to develop the architecture of software systems and their individual components in the construction of intelligent control systems in various fields, to manage the life cycle processes of software of intelligent control systems.

Learning outcomes

PLO11. Have the skills to manage the life cycle of software, products and services of information technology in accordance with the requirements and restrictions of the customer, be able to develop project documentation (feasibility study, terms of reference, business plan, agreement, contract).
PLO20. Develop the architecture of software systems and their individual components in the construction of intelligent control systems in various industries, as well as manage the life cycle processes of software of intelligent control systems.

Student workload

The total volume of the course is 90 hours (3 ECTS credits): lectures – 20 hours, laboratory classes – 20 hours, self-study – 50 hours.

Course prerequisites

Business analysis methods for requirements management
Software architecture and design

Features of the course, teaching and learning methods, and technologies

Teaching and learning methods:
interactive lectures with presentations, discussions, laboratory classes, teamwork, case method, student feedback, problem-based learning.
Forms of assessment:
written individual assignments for laboratory work (CAS), assessment of knowledge in laboratory classes (CAS), express surveys (CAS), online tests (CAS), final/semester control in the form of a semester exam, according to the schedule of the educational process (FAS).

Program of the course

Topics of the lectures

Topic 1: Introduction to project management
Concept of project and project management. The history and evolution of the formation of project management methodologies. Characteristics and main groups of requirements. Requirements management process. Requirement's detection methods. Problems that arise when requirements are identified. Requirement's analysis. Documentation of requirements. Checking requirements. Management of requirements changes. Requirements management software.
Topic 2. Project life cycle. Project organization according to PMBoK methodology
Project life cycle model. The main components of the initialization process. Planning levels. Definition of project works. Procedures for organizing project implementation. Performance reports. Requirements for the control system. Study of the main points that need monitoring. Actions to complete the project. Project audit. External and internal environment of the project.

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Topic 3. Initialization and Planning processes

Project life cycle. Fields of knowledge. Five groups of management processes. The main limitations of the project. Development of a project management plan. Estimate duration and resources. Project cost estimate. Establishing quality standards. Establishing communication. Identification of risks and procurement planning. Change planning.

Topic 4. Execution, Monitoring and control, Completion processes

Procedures for organizing project implementation. Performance reports. Monitoring and control of execution. Quality audit and continuous improvement. Integration processes for PM. Integrated change control. The final stage and obtaining the right of transfer. Project closure and reflection.

Topic 5. Agile technologies in project management. SCRUM

The main features of flexible management technologies. Principles and features of implementation approaches.

Topic 6. Group dynamics and social communications

Stages of team formation: unification, disagreements and conflicts, formation, return. Disbanding of the team. Indicators of effective team activity. Factors of employee immaturity. Skills of an effective programmer. Professional and unprofessional behavior in the team. Effective time management. Virtual teams, features of interaction. Communication.

Topics of the workshops

Workshops are not provided within the discipline.

Topics of the laboratory classes

Topic 1. Analysis of the subject area. Problem analysis: building a problem tree. Building a tree of goals.
Topic 2. Development of the Project Charter. Scope of the project.
Topic 3. Development of communication policy.
Topic 4. Develop a Product Backlog.
Topic 5. User interface design, prototype development

Self-study

Individual assignments are not provided in the curriculum.
Students are recommended with additional materials (videos, articles) for self-study and processing.

Course materials and recommended reading

Key literature

1. A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Seventh Edition and The Standard for Project Management (ENGLISH) Seventh edition, Kindle Edition, 2021
2. Agile Practice Guide Kindle Edition, 210 pages, 2017
3. E. SAFe 5.0 Distilled: Achieving Business Agility with the Scaled Agile Framework 9780136820406 Report DMCA / Copyright 2020
4. G. Agile Transformation: Using the Integral Agile Transformation Framework™ to Think and Lead Differently [1 ed.] Report DMCA / Copyright 2020
5. Succeeding with Agile Hybrids: Project Delivery Using Hybrid Methodologies [1st ed.] Pages XI, 157 [156] Year 2020

Additional literature

1. Doing Agile Right: Transformation Without by Darrell Rigby, Sarah Elk, Steve Berez
Chaos Hardcover – Illustrated, May 26, 2020
2. The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company by Steve Blank and Bob Dorf | Mar 17, 2020
3. Hohl P, Klünder J, van Bennekum A. Back to the future: origins and directions of the "Agile Manifesto"— views of the originators. J Softw Eng Res Dev. 2018;6(1):15. doi:10.1186/s40411-018-0059-z
4. Klünder J, Horstmann J, Karras O. Identifying the Mood of a Software Development Team by Analyzing Text-Based Communication in Chats with Machine Learning: Springer; 2020;133-151.

Assessment and grading

Criteria for assessment of student performance, and the final score structure

100% of the final grade consists of the results of the assessment in the form of an exam (40%) and current assessment (60%):
- 6 laboratory works (6% each);
- 2 tests (12% each).

Grading scale

Total points	National	ECTS
90–100	Excellent	A
82–89	Good	B
75–81	Good	C
64–74	Satisfactory	D
60–63	Satisfactory	E
35–59	Unsatisfactory (requires additional learning)	FX
1–34	Unsatisfactory (requires repetition of the course)	F

Norms of academic integrity and course policy

The student must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": to demonstrate discipline, good manners, kindness, honesty, and responsibility. Conflict situations should be openly discussed in academic groups with a lecturer, and if it is impossible to resolve the conflict, they should be brought to the attention of the Institute's management.
Regulatory and legal documents related to the implementation of the principles of academic integrity at NTU "KhPI" are available on the website: http://blogs.kpi.kharkov.ua/v2/nv/akademichna-dobrochesnist/

Approval

Approved by	08.06.2023	Head of the department
		Ihor HAMAIUN
	08.06.2023	Guarantor of the educational program
		Andrii KOPP